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Term: compress$4 same (scan$4 or read$4 or ccd or sensor) near8 (port$4 or part$4 or section or region or line or sector or wavelet or sample)

Display: 10 **Documents in Display Format:** - **Starting with Number** 1

Generate: ○ **Hit List** ◉ **Hit Count** ○ **Side by Side** ○ **Image**

Search Clear Interrupt

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DATE: Monday, April 12, 2004 Printable Copy Create Case

Set Name side by side	**Query**	**Hit Count**	**Set Name** result set
	DB=PGPB,USPT,USOC,EPAB,JPAB,DWPI; PLUR=YES; OP=OR		
L2	compress$4 same (scan$4 or read$4 or ccd or sensor) near8 (port$4 or part$4 or section or region or line or sector or wavelet or sample)near5 (image or data or area or pictorial or picture) near6 (horizon$5 or x) and (wavelet or quant$6 or coefficient) and @ad<20010108 and (encod$4)	93	L2
L1	compress$4 same (scan$4 or read$4 or ccd or sensor) near6 (port$4 or part$4 or section or region or line or sector or wavelet or sample)near5 (image or data or area or pictorial or picture) near6 (horizon$5 or x) and (wavelet or quant$6 or coefficient) and (hl or ll or lh or ll) and @ad<20010108	12	L1

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Term: compress$4 same (scan$4 or read$4 or ccd or sensor) near6 (port$4 or part$4 or section or region or line or sector or wavelet or sample)

Display: 10 **Documents in Display Format:** - **Starting with Number** 1

Generate: ○ **Hit List** ◉ **Hit Count** ○ **Side by Side** ○ **Image**

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	DB=PGPB,USPT,USOC,EPAB,JPAB,DWPI; PLUR=YES; OP=OR		
L1	compress$4 same (scan$4 or read$4 or ccd or sensor) near6 (port$4 or part$4 or section or region or line or sector or wavelet or sample)near5 (image or data or area or pictorial or picture) near6 (horizon$5 or x) and (wavelet or quant$6 or coefficient) and (hl or ll or lh or ll) and @ad<20010108	12	L1

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Term:
```
((ccd or read$4 or scan$4 or imager) near8
(clock$4 or read$4 adj out or frame or out) near6
(slow or low or reduc$4) near4 (resolution or
```

Display: 10 **Documents in Display Format:** - **Starting with Number** 1

Generate: ○ **Hit List** ◉ **Hit Count** ○ **Side by Side** ○ **Image**

Search Clear Interrupt

Search History

DATE: Monday, April 12, 2004 Printable Copy Create Case

Set Name side by side	Query	Hit Count	Set Name result set
	DB=PGPB,USPT,USOC,EPAB,JPAB,DWPI; PLUR=YES; OP=OR		
L1	((ccd or read$4 or scan$4 or imager) near8 (clock$4 or read$4 adj out or frame or out) near6 (slow or low or reduc$4) near4 (resolution or speed) same (parameter or value or coefficient)) and @ad<20010122	219	L1

END OF SEARCH HISTORY

First Hit Fwd Refs

Generate Collection Print

L4: Entry 43 of 50 File: USPT Mar 17, 1987

DOCUMENT-IDENTIFIER: US 4651221 A
TITLE: Facsimile transmission system

Abstract Text (1):
A charge coupled device (CCD) photosensor array (32) continuously performs horizontal scan and feeds out data signals representing horizontal scan lines in such a manner that data signals representing one horizontal scan line are produced during one horizontal scan pulse and fed out during the next horizontal scan pulse. A buffer memory (33) stores at least two scan lines in such a manner that one scan line may be read out for compression while another scan line is being stored. A buffer ready signal is produced when there is sufficient vacant space in the buffer memory (33) to store one scan line and vertical scan is effected in response thereto. The buffer memory (33) is controlled to store only data signals produced during vertical scan to maintain the line scan density constant.

Application Filing Date (1):
19790817

Brief Summary Text (5):
In a CCD array the scan rate must be kept constant in order to prevent a variation in the integration time of internal capacitors which would produce erroneous data. Thus, the buffer memory is operated in a demand manner. More specifically, data is read out of the buffer memory upon demand from the compressor in accordance with the instantaneous compression rate. When enough vacant space becomes available in the buffer memory to store one scan line, a scan line from the scanner is stored in the buffer memory and a vertical scan or incrementation operation is performed. Where the compression rate is low, data will not be stored in the buffer memory in response to each horizontal scan and some horizontal scans will be skipped. For this reason, a vertical scan operation is performed only when a line of data is to be stored in the buffer memory.

Brief Summary Text (6):
When the compression rate is low and a previous horizontal scan has been skipped, the next line of data stored in the buffer memory will correspond to a horizontal scan performed while a vertical scan was not being performed, or while the array was stationary relative to an original document. Thus, the area of the document represented by the horizontal scan will be narrow.

Brief Summary Text (10):
While the basic prior art apparatus of this type is generally feasible in practical application, a certain amount of distortion is encountered when the apparatus is employed in conjunction with a data compression unit such as a run lenth encoder. Such a compression unit operates at variable speed which depends on the original document. Where the document contains a large proportion of dark areas, the compression process is relatively slow. For this reason, it is often necessary to interrupt scanning to prevent the data fed from the array into the compression unit or encoder from exceeding the capacity of the encoder.

Brief Summary Text (11):
When the array is controlled by the encoder to begin or resume scanning, the array

is scanned simultaneously with moving the document for vertical scan. As a result, the area convered in the vertical direction by each photosensor element for the current scan line corresponds only to the area of the photosensor element. This differs greatly from continuous scanning where the area covered in the vertical direction by each element corresponds to the product of the width of the element in the horizontal direction and the distance the document is moved relative to the array plus the area of the element. This is because when scanning is begun the output signals of the elements are immediately transferred to the shift register and thereafter fed out. The document is at rest when the transfer is made. Thus, not only is the accumulated charge different from that in continuous scan but image areas between scan lines are not scanned.

Brief Summary Text (15):
A facsimile transmission apparatus embodying the present invention includes a scanner, horizontal scan pulse generator means for generating horizontal scan pulses, the scanner continuously performing horizontal scan and feeding out data signals representing horizontal scan lines in response to the horizontal scan pulses in such a manner that data signals representing a horizontal scan line are produced during a horizontal scan pulse and fed out during a next horizontal scan pulse, buffer memory means for storing data signals representing at least two scan lines during respective horizontal scan pulses, compressor means for reading data signals from the buffer memory means and compressing the data signals and vertical scan means for performing vertical scan, the buffer memory means producing a buffer ready signal when capable of storing data signals representing a horizontal scan line, the vertical scan means performing vertical scan in response to the buffer ready signal, and is characterized by comprising control means for controlling the buffer memory means to store only data signals produced by the scanner while the vertical scan means was performing vertical scan.

Brief Summary Text (16):
In accordance with the present invention, a charge coupled device (CCD) photosensor array continuously performs horizontal scan and feeds out data signals representing horizontal scan lines in such a manner that data signals representing one horizontal scan line are produced during one horizontal scan pulse and fed out during the next horizontal scan pulse. A buffer memory stores at least two scan lines in such a manner that one scan line may be read out for compression while another scan line is being stored. A buffer ready signal is produced when there is sufficient vacant space in the buffer memory to store one scan line and vertical scan is effected in response thereto. The buffer memory is controlled to store only data signals produced during vertical scan to maintain the line scan density constant.

Brief Summary Text (17):
It is an object of the present invention to provide a facsimile transmission process and apparatus which prevents loss of image information when operated in an intermittent manner under the control of a run length encoder or the like.

Detailed Description Text (5):
The data signals are read out of the buffer memory 33 and designated as output signals DO in such a manner that one scan line is read out of the buffer memory 33 in response to one read request pulse PI' in synchronism with read clock pulses PD' and fed to a compression unit 34. The compression unit 34 typically performs run length encoding on the data signals DO to compress the data and thereby increase the transmission speed. The compressed or encoded data signals are designated as D' and are fed to a modem 36 for modulation and transmission to a remote facsimile receiver (not shown).

Detailed Description Text (7):
Referring now to FIG. 3, it will be seen that the scanner 22 comprises a pulse generator 41 which generates the horizontal scan pulses PI, write clock pulses PD

and also clear pulses PIO. The array 32 comprises a sensor array 42, capacitor array 43, MOS switch array 44 and CCD analog shift register 46. The output of the shift register 46 is fed through an amplifier 47 to a quantizer 48 which produces the data signals D in binary form.

Detailed Description Text (12):
During the time while the horizontal scan pulse PI is logically high, the transistors 56 are turned off and the data signals which were transferred from the capacitors 53 into the elements 57 during the previous horizontal scan pulse PI are shifted out of the shift register 46 to the quantizer 48 in synchronism with the write clock pulses PD. This operation is illustrated in FIG. 5 for data signals Dn to Dn+2.

Detailed Description Text (22):
The feature of the present invention is that the scan lines D2, D3 and D5 are stored in the memory 33 rather than the scan lines D1, D2 and D4. Each of the scan lines D2, D3 and D5 is produced while the document 27 is in motion, or while vertical scan is being performed. Each scan line D2, D3 and D5 has a width equal to 2d.DELTA., and adjacent scan lines D2, D3 and D5 which are stored in the memory 33 overlap by a width d.DELTA. in a regular manner. Thus, information between adjacent scan lines is not lost and there is no distortion. The principle of the present invention is therefore to store only those data lines for compression which were produced during vertical scan. The means for embodying this principle will be well understood from the following description of the buffer memory 33.

CLAIMS:

1. A facsimilar transmission apparatus including a scanner, horizontal scan pulse generator means for generating horizontal scan pulses, the scanner continuously performing horizontal scan and feeding out data signals representing horizontal scan lines in response to the horizontal scan pulses in such a manner that data signals representing a horizontal scan line are produced during a horizontal scan pulse and fed out during a next horizontal scan pulse, buffer memory means for storing data signals representing at least two scan lines during respective horizontal scan pulses, compressor means for reading data signals from the buffer memory means and compressing the data signals and vertical scan means for performing vertical scan, the buffer memory means producing a buffer ready signal when capable of storing data signals representing a horizontal scan line, the vertical scan means performing vertical scan in response to the buffer ready signal, characterized by comprising:

control means for controlling the buffer memory means to store only data signals produced by the scanner while the vertical scan means was performing vertical scan;

the control means comprising first means constructed to, in response to the buffer ready signal and a leading edge of a first horizontal scan pulse in coincidence, produce a vertical scan signal causing the vertical scan means to perform vertical scan and second means constructed to, in response to a trailing edge of the first horizontal scan pulse, produce a store signal causing the buffer memory means to store data signals during a second horizontal scan pulse which follows the first horizontal scan pulse.

Generate Collection

L1: Entry 5 of 12 File: USPT Nov 20, 2001

DOCUMENT-IDENTIFIER: US 6321266 B1
**** See image for Certificate of Correction ****
TITLE: Input/output apparatus connected to a plurality of host computers via a network

Application Filing Date (1):
19960604

Detailed Description Text (157):
In a data compression, a real video image data is firstly stored in an external line buffer 219 and transferred to a color space converter 221 in which RGB data is converted into a color space data having Y, Cr, Cb data. In some cases, Cr, Cb data is sub-sampled as color difference components to discard the redundancy of the video image. Each of 8.times.8 picture elements is converted on a frequency space by a DCT computer 222. Then, as shown in FIG. 11, a DCT coefficient is scanned by a zigzag scanner 223 and quantized by a quantizer 224.

Detailed Description Text (158):
On this moment, a quantization coefficient which corresponds to 8.times.8 DCT coefficient has been stored in a quantization table 225. The compressed video image data, which is made by codifying data temporarily stored in an internal FIFO memory 226 in a predeterming timing referring to a Huffman table 228 by a Huffman encoder 227, is stored in a CODEC register 229 which can be accessed by an external host computer.

Detailed Description Text (159):
The color space converter 221, the DCT computer 222, the zigzag scanner 223, the quantizer 224 and the quantization table 225 constitute a pipe line operational block operable at a high speed in synchronization with a timing clock. The Huffman encoder 227, the Huffman table 228 and the CODEC register 229 constitute a non-synchronous operational block operable at a not high but compatible speed with those of CPU and DMA in synchronization with a speed at which the external CPU accessed the CODEC register 229. The pipe line operational block is constructed in such a manner to be able to operate at a high speed so that it can follow a video image transfer clock of the scanner 94A/printer 94B.

Detailed Description Text (163):
Operation for expansion is basically a reverse process to compression and, when compressed image data is transferred to the CODEC register, the image data is reversely Huffman-coded or decoded in the Huffman encoding part 227 while referring to the Huffman table 228. The values obtained are inversely quantized in the quantizer 224 after having been speed-controlled in the FIFO memory 226. Inverse quantization is carried out by multiplying the values by a quantizing coefficient 8.times.8 of the quantizing table 225. Image data is zigzag-scanned by the zigzag scanner 223 and transferred DCT coefficient to the DCT computer 222. Then the image data is returned from Y, Cr, Cb and the like which are compressed color spaces to original RGB space or the like in the color space converter 221.

Detailed Description Text (165):
In addition, the quantizer 224 carries out division for quantization and

multiplication for reverse quantization. In this case, division is a kind of multiplication if the quantizing coefficient for division serves as a reciprocal and therefore compression and expansion can be done in the same circuit. The following describes in detail the operations of respective modes of the first SP interface circuit 4-1 as an example while referring to FIGS. 12 to 15.

Detailed Description Text (169):
In processing of the right-side data frame of a two-divided image from the CPU 1000 of the board circuit shown in FIG. 9, image data is written from the VME interface 301 into the FIFO memory 302 through the buffer 303. Image data is temporarily stored from the FIFO memory 302 into the RAM 305 through the buffer 304. The SRAM 305 operates synchronized with the pipe line part of the image compression/expansion part. When the data as much as 8 lines in the vertical direction of the image are stored in the RAM 305, the image compression/expansion part 306 reads every horizontal and vertical 8.times.8 units from the SRAM 305 and the compressed data obtained are sequentially written into the DRAM 308 through the DMA controller 307. At this time, the DMA controller 307 operates the address counter 309 to generate an address or counts up the address to give it to the DRAM 308 through the selector 310. In the third mode, the CPU 1000 of the board circuit issues the address through the VME interface 301 and the selector 310 and up dates the data in conjunction with the DRAM 308 through the interface converter 312. Accordingly, the compressed data can be directly sent to the DRAM 308 and standard compressed data for which the image is not divided into two portions can be processed. However, such processing is unsuitable for those data of a low compression ratio.

Detailed Description Text (183):
Since the external FIFO memory 326 and the internal FIFO memory 302 overflow or underflow when the processing speed of the image compression expansion part 306 delays due to excessively high operating speed of the scanner 94A and the printer 94B, the counter error controller 399 temporarily stops video signals (video=image) at the scanner 94A and the printer 94B. Simple error processing is carried out so that video signals in the unit of one line are abandoned from the scanner 94A and margin data in the unit of one line is outputted from the printer 94B to prevent of the flow of video signals from destruction due to the overflow or underflow from the FIFO memory. Accordingly, when the counter error controller transfers error information to the controller 388, the controller 389 checks a margin of one line and effective parts of left-side image and right-side image and outputs an error cancel signal at the delimitation of one line, while the controller 389 indicates other related parts to clear input/output data of the scanner 94A and the printer 94B and enables the image compression/expansion part 306 to carry out compression or expansion up to the delimiting point of one horizontal line despite that the image compression/expansion part 306 operates behind the processing of the scanner 94A and the printer 94B during processing of the error. This permits error resetting again at the delimitation of one line. However, for compression, the white line is compressed during error processing to accelerate the compression speed and, for expansion, image data is abandoned because it cannot be sent in time to the printer 94B.

Detailed Description Text (220):
When various parameters for printing are written into the dual-port RAM 403 from the board circuit through the VME bus, the CPU 401 reads out the data and interprets and control it. For example, for printing RGB data, the CPU 401 sets a table with a through-operating characteristic which does not cause LUT data of the image processing circuit 404 to change, sets the coefficients for conversion from NTSC-RGB to 13J-RGB in the coefficient table for the matrix of the image processing circuit 405, and controls the gates of buffers 420 and 421 so as to pass through the binary coding processing of the image processing circuit 406.

Detailed Description Text (223):

Various parameters for scanning operation are written from the board circuit into the dual-port RAM 403 through the VME bus. The read and interprets the data and carries out the control. For example, when binary-coded RGB data is scanned in the size of 1024.times.1024 at the position of 512.times.512, the CPU 401 sets a table with a through-operating characteristic in the LUT of the image processing circuit 404 and the coefficients for conversion from BJ-RGB to NTSC-RGB in the matrix coefficient table of the image processing circuit 406 and controls the gates of buffers 420 and 421 so as to pass through binary coding processing of the image processing circuit 406. In addition, a size of the image to be scanned is set to 1024.times.1024 and the scan start position is set to 512.times.512. These parameters are transferred to the scanner 95A through the parallel/serial converter 407. Then the CPU 401 transmits a scan start command to the scanner 95A. Image data entered from the reader part of the scanner 95A is entered into image processing circuits 404, 405 and 406 through the interface 423. Here image processing is carried out according to the predetermined parameters and 32-bit format RGBX data is stored in the memory 408 through the buffer 419. At this time, the memory 408 stores RGBX data as described above. In this example, the scanner 95A is set to scan binary-coded RGB image data and therefore X is meaning less data. Though R, G and B color components are binary-coded data. One byte is assigned to one pixel. In this case, the board circuit carrier out a processing for which data is processed in a common format requested for binary-coded image data, for example, by packing bytes to arrange RGB data in the order of raster lines. Image data stored in the memory 408 is transferred to the board circuit through the VME bus interface 415. One scanning operation is completed by repeating the above processing as many times as the number of bands.

Detailed Description Text (346):
where Ra, Ga, and Ba are coordinates (Ra, Ga, Ba) at any point in the color space A. The coordinates of the corresponding point in the YCrCb color space are (y, cr, cb). To approximate this formula for any color space, coefficients (a11 to a33) are obtained by for example least square method. Thus, the input color space of the device is converted into the color space on the communication path corresponding to the formula (1).

Detailed Description Text (351):
where Y, M, C, and K are printing prime colors that are yellow, magenta, cyan, and black components; Rh, Gh, and Bh are standard color space components on the recording side; A11 to A43 are coefficients at a plurality of points representing the relation between printing color space and recording inner standard color space. These coefficients A11 to A43 are calculated by least square method.

Detailed Description Text (354):
When components (Rh, Gh, Bh) on the HDTV color space are obtained from components (Rn, Gn, Bn) on the NTSC color space, Rn, Gn, and Bn are converted into Ln, an, bn with CIEL*a*b*. Likewise, (Rh, Gh, Bh) are converted into (Lh, ah, bh) with CIEL*a*b*. When Ln is constant, the outermost peripheral approximation positions on the HDTV and NTSC color spaces that almost satisfy .theta.=a tan (an/bn) are obtained from the above-mentioned table. When the NTSC outermost peripheral plane position is (Lon, aon, bon) and the HDTV outermost peripheral plane position is (Lon, aoh, boh), ah and bh are given by formula (3).

First Hit

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L2: Entry 93 of 93 File: DWPI Jan 13, 2004

DERWENT-ACC-NO: 2004-153901
DERWENT-WEEK: 200415

TITLE: Data compressor in document scanner, performs multi-stage horizontal wavelet transform on image data to generate high and low frequency coefficients, to perform vertical wavelet transform on low frequency coefficients

Basic Abstract Text (1):
NOVELTY - A primary circuit (20) performs multi-stage horizontal wavelet transform on image data, to generate high and low frequency coefficients. The high frequency coefficients are quantized, entropy encoded and written in memory (21) on row by row basis. A secondary circuit (22) performs vertical wavelet transform on low frequency coefficients and quantize/entropy encodes the resultant coefficients.

Basic Abstract Text (4):
(2) apparatus for performing multi-stage wavelet transform on image data; and

Basic Abstract Text (5):
(3) method for performing multi-stage wavelet transform on image data.

PF Application Date (1):
20000830

Standard Title Terms (1):
DATA COMPRESSOR DOCUMENT SCAN PERFORMANCE MULTI STAGE HORIZONTAL TRANSFORM IMAGE DATA GENERATE HIGH LOW FREQUENCY COEFFICIENT PERFORMANCE VERTICAL TRANSFORM LOW FREQUENCY COEFFICIENT